AMENDMENT TO THE CLAIMS

1. (Currently Amended) A method of decoding data comprising:

receiving a signal comprising a plurality of bit patterns at a bank of equalizers, each
equalizer in the bank of equalizers tuned to a different bit pattern with a
corresponding equalization target during normal operation;

generating pattern dependent outputs from the equalizers; and

calculating an estimated bit sequence with a detector using the pattern dependent outputs.

2. (Original) The method of claim 1 wherein the signal is received from a recording
channel.

3. (Original) The method of claim 1 wherein the step of receiving comprises:

reading a sequence of signal samples from a channel; and

passing segments of the sequence of signal samples to the bank of equalizers one segment
at a time.

4. (previously presented) The method of claim 1 wherein the step of calculating
comprises:

calculating a path metric for every possible state transition sequence of a bit pattern using
the pattern dependent equalizer outputs according to transition information; and

selecting a bit sequence corresponding to a path having the smallest accumulated path
metric.

5. (Original) The method of claim 1 wherein each equalizer includes a pattern-dependent
filter.

6. (Original) The method of claim 1 wherein each equalizer includes an adaptive
algorithm for tuning each equalizer to a bit pattern during use.

7. (Currently Amended) A method of decoding data comprising:

processing a segment of a received signal in a bank of equalizers, each equalizer tuned to
        a different bit pattern and an equalization target to produce an equalized output for
        each equalizer during normal operation; and

detecting a bit sequence using a branch metric calculation to process the equalized output.

8. (Original) The method of claim 7 wherein the step of processing comprises:

dividing the segment of the received signal into finite overlapped segments, and

calculating an equalized output for each of the finite segments with the bank of
        equalizers.

9. (Original) The method of claim 7 wherein the equalized output is used in sequence
detection according to the bit pattern associated with the equalizer.

10. (Original) The method of claim 7 wherein a number of equalizers in the bank of
equalizers is determined by a maximum number of possible states for a selected pattern window.

11. (Original) The method of claim 7 wherein before the step of processing, the method
further comprising:

tuning each equalizer in the bank of equalizers to a bit pattern.

12. (Original) The method of claim 11, wherein the step of tuning comprises:

selecting an equalizer from the equalizer bank;

sending known data to the selected equalizer to calculate a target output signal;

calculating a difference between an output signal from the selected equalizer and the
        target output signal; and

tuning the selected equalizer to minimize the difference.

13. (Original) The method of claim 7 wherein the branch metric calculation is a square of a difference between a received signal sample and a desired target signal determined by a state transition.

14. (Original) The method of claim 7 wherein the equalization target is pattern-dependent.

15. (Original) The method of claim 7 wherein the branch metric calculation is based on a noise whitening principle when noise in the received signal is correlated.

16. (Original) The method of claim 7 wherein the branch metric calculation is based on a covariance matrix of noise when noise in the received signal is correlated.

17-29. (Cancelled)

30. (Previously Presented) The method of claim 1 wherein generating pattern dependent outputs includes reducing total noise in the pattern dependent outputs prior to the step of calculating.

31. (New) A method of decoding data comprising:

tuning each equalizer of a bank of equalizers to a bit pattern, wherein tuning each
        equalizer includes selecting an equalizer from the bank of equalizers, sending
        known data to the selected equalizer, calculating a difference between an output
        signal from the selected equalizer and a target output signal, and tuning the
        selected equalizer to reduce the difference;

processing a segment of a received signal in a bank of equalizers, each equalizer tuned to
        a different bit pattern and an equalization target to produce an equalized output for
        each equalizer; and

detecting a bit sequence using a branch metric calculation to process the equalized output.

32. (New) The method of claim 31 wherein the step of processing comprises:

dividing the segment of the received signal into finite overlapped segments, and

calculating an equalized output for each of the finite segments with the bank of
        equalizers.

33. (New) The method of claim 31 wherein the equalized output is used in sequence
detection according to the bit pattern associated with the equalizer.

34. (New) The method of claim 31 wherein a number of equalizers in the bank of
equalizers is determined by a maximum number of possible states for a selected pattern window.